

# WALKING THE WALK WITH FIBER REINFORCED POLYMER (FRP)



CREATIVE  
COMPOSITES  
GROUP





## Walking the Walk With Fiber Reinforced Polymer (FRP)

Traditional construction materials for pedestrian bridges generally consist of wood, concrete, and/or metal, with the choice in material depending on environmental and traffic restrictions and requirements. However, advancements in material manufacturing have led to the development of fiber reinforced polymers that are suitable for use in modern bridge construction projects. These materials serve as an alternative to—and offer a multitude of benefits over—concrete, steel, and wood in new construction projects and reconstruction and restoration operations.

Fiber reinforced polymers (FRP) are polymer matrix materials reinforced with durable internal fibers. Combining these existing materials results in a lightweight and durable engineered material capable of withstanding decades of wear. FRP materials are now used in many bridge elements including decks, beams, railings, rebar and strengthening repairs.

At Creative Composites Group, our bridge deck products take advantage of the design flexibility of FRP's material properties. The decks are custom-engineered to require minimal maintenance, provide maximum corrosion resistance, and maintain a safe, non-skid surface. To accommodate different bridge configurations and applications, the products are available in a wide range of shapes, sizes, strengths, stiffnesses, and thicknesses with options for the integration of functional components such as crowns, skews, curbs, and drain scuppers. For more unique customer requirements, we offer further customization capabilities for both functional and aesthetic elements (e.g., custom material colors).

Regardless of the specifications of your bridge project, our prefabricated FRP products facilitate fast and easy installation and very low maintenance, saving you time and money.



## Why Use FRP for Pedestrian Bridge Decks?

When used in pedestrian bridge applications, FRP provides several advantages over other construction materials, such as:



### Lightweight Construction



An FRP panel is only 20% the weight of a comparable reinforced concrete panel with pounds per square foot (psf) ranging from 4–12 psf (compared to concrete's 50–75 psf). This weight reduction extends a number of practical benefits, including:

- Smaller superstructures and substructures (reducing the initial investment and geotech soil requirements)
- Easier transportation and installation of construction materials (lowering resultant costs)
- Construction of fully assembled bridge spans and longer truss spans (increasing construction efficiency and less traffic impact on adjacent roads)



## Corrosion Resistance to Chemicals and Water



FRP materials demonstrate superior durability compared to other construction materials. They offer excellent resistance to corrosion and wear, even with frequent exposure to moisture, chemicals, and extreme temperatures. These properties mean that a bridge constructed with FRP materials—such as those provided by Creative Composites Group—can last upward of 75 years while requiring little to no maintenance.



## Design Flexibility



We design and manufacture our FRP bridge decks to meet the performance requirements unique to your pedestrian bridge project. Our decking works with any superstructure configuration and incorporates all necessary design features. Our deck products are available in a variety of sizes, shapes, and depths with varying stiffnesses, strengths, and colors depending on your functional and aesthetic requirements.



## Safe



Despite its lightweight construction, FRP offers strength comparable to that of steel (over 40 ksi). The high strength-to-weight ratio means that FRP can:

- Handle heavy loads of pedestrian crowds and vehicles to AASHTO specifications
- Be used to cantilever a pedestrian sidewalk off of vehicle bridges, separating foot traffic from vehicle traffic
- Always have high strength safety factors

FRP's non-slip surface also minimizes the risk of injury or accident to pedestrians and cyclists.



## Aesthetics



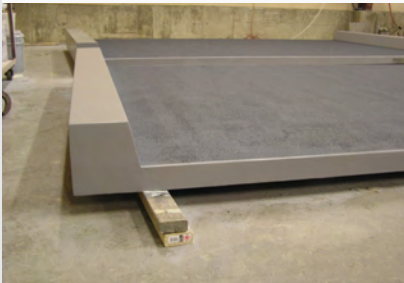
Pedestrian bridges often are a signature structure for a local community. FRP decking contributes to the aesthetics by providing shapes (including curves) and colors that blend with the surroundings. The deck and the non-skid surface are available in a wide range of colors.



## Design Features

Our products integrate functional components, which improves the aesthetics of the bridge, delivers a prefabricated product to the job site that matches the plans, and further reduces construction time and costs.

Curbs



Expansion Joints



Access openings for utilities



Crown or cross-slopes



Drain scuppers



Rail post connections



Signs and benches



# Case Studies of FRP Usage in Pedestrian Bridges

At Creative Composites Group, we can proudly point to numerous successful projects as evidence of FiberSpan's advantages in pedestrian bridge applications.

## Anacostia Pedestrian Bridges (Washington, DC)

The East and West Anacostia pedestrian bridges exemplify our ability to create functional and attractive bridge designs. For this project, we engineered a custom S-shaped path to follow existing trails and railroads and incorporated low-maintenance non-skid coating to protect park visitors.



## Wolf Trap National Park Pedestrian Bridge (Vienna, VA)

At Wolf Trap National Park, we employed fiber reinforced polymer material to help accelerate the construction of a fully assembled truss bridge. We developed an FRP design that reduced the total weight of the bridge by 74,000 pounds compared to a concrete design. Additionally, the more lightweight design allowed the bridge span positioning to be completed in 15 minutes.



## Columbia River Skywalk (British Columbia, Canada)

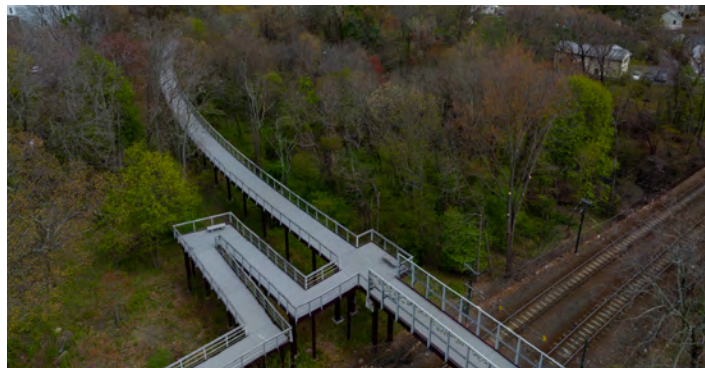
The Columbia River Skywalk challenged our ability to adapt to custom shapes and complex functional requirements. To add a pedestrian bridge to the revamped historical area, we had to use custom, lightweight decking that installed over the large river and fit around the bridge's masts. We also fulfilled requests for drainage scuppers, access hatches, and insets for stringer splices, all while maintaining an attractive, consistent, and budget-friendly design.



# Case Studies

## West Thames Bridge (Manhattan, NYC)

Crossing six lanes of traffic in lower Manhattan where two tunnels emerge into NYC, the West Thames Bridge provides safe and easy pedestrian movement in one of the most crowded places in the USA. The signature bridge sports a glass roof, lighting, and an elevator as well as the durable FRP deck. In sight of One World Trade Center, the bridge connects Battery Park and the Financial District and is used by business, tourists, residents and even children going to school.



## Neponset Greenway (Boston, MA)

Neponset River Greenway, on the Boston and Milton shore of the Neponset River, is a miles-long, waterfront multi-use trail. A 1,060-foot-long Canopy Walk carries users through the treetops of a mature oak grove and over the rail line to Mattapan Station and Mattapan Square.

## Lake Tahoe East Shore Trail (Incline Village, NV)

A new shoreline trail was created along the Nevada side of the lake to allow visitors, hikers and bicyclists to safely enjoy this beautiful natural area. Many sections of the trail needed bridges to span over the steep, rocky inclines. FRP decking was selected for both aesthetics and the fast installation of lightweight, prefabricated bridge spans.







## Commission Your FRP Bridge Design With Creative Composites Group

There's no longer any reason to settle for heavier, less durable bridge construction materials. Creative Composites Group's FiberSpan prefabricated decking offers the ultimate combination of strength, versatility, and function, extending the lifespan of your project far beyond what concrete or wood can provide.

To partner with us for your next bridge project, **request a quote today** for design and cost estimates.

# Partner With Creative Composites Group

## Your Single Source for Innovatively Engineered Solutions Using Fiber Reinforced Polymer Composites

Advance your products and projects beyond the limitations of traditional concrete, steel, and wood by leveraging the combined strength of Creative Composites Group. We are a leader in technical innovation that is backed by the industry's most comprehensive FRP manufacturing group for infrastructure.

As Creative Composites Group, we can help you engineer and manufacture your next bridge infrastructure project to meet the needs of future generations.

We offer comprehensive engineering, design and consultation for pedestrian bridges and access structures. Our manufacturing capabilities include the broadest range of engineered FRP solutions to build your ideal projects. That's possible only with our proven engineering processes, end-to-end collaboration, service and support resources. Since FRP composites last longer than conventional materials they often have a lower lifetime cost when you consider longer service life and low to no maintenance costs.

## Discover Your Custom Engineered FRP Provider

Creative Composites Group is committed to becoming a trusted business partner who is keenly interested in your project's success. Creative Composites Group works alongside your team, from owners to design engineers and contractors, to help you develop and customized FRP solution that meets the most demanding structural requirements and environmental conditions.

Contact us for your next engineered FRP pedestrian or bicycle bridge, cantilever sidewalk or skywalk. We don't just talk the talk, we walk the walk and would be thrilled to discuss it with you!

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